

ABSTRACT

A gasifying apparatus comprises a gasifier, a reformer and a heating device. The gasifier produces a thermal decomposed gas with use of a thermal decomposition reaction of a liquid or solid fuel such as waste or coal, and the heating device heats a low-temperature steam and air so as to be a high-temperature steam and air, which have a temperature equal to or higher than 700 deg. C. The gasifying apparatus has feeding means including fluid passages for feeding the high-temperature steam and air to the gasifier and the reformer. In a thermal decomposition area of the gasifier, the liquid or solid fuel is thermally decomposed to produce the thermal decomposed gas with sensible heat of the high-temperature steam and air and with the heat generated by an exothermic oxidation reaction between the high-temperature air and the liquid or solid fuel. In the reformer, the thermal decomposed gas is reformed in the existence of the high-temperature steam so as to be a high-temperature syngas. The steam reforming reaction of the liquid or solid fuel is carried out with an exothermic reaction between the high-temperature air and hydrocarbon contained in the thermal decomposed gas and with an endothermic reaction between the hydrocarbon and the high-temperature steam.

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